





## INSTALLATION

### I. SCREEN LOCATION

The first step in setting up the Model 1000A is the selection of the screen location. This involves two important considerations: room lighting and room traffic patterns.

**Room lighting.** The textured aluminum reflecting surface of the screen reflects light in somewhat the same way that a mirror does. Light striking the screen from one side will reflect off to the other side. But light arriving at the screen from the direction of the viewing area will be reflected back toward the viewing area, spoiling the picture contrast. So, if possible, the screen should be placed adjacent to windows rather than opposite them. Figure 1 indicates good and bad placement relative to windows. With the "good" setup it would be possible to watch television comfortably during the day, with only light-colored shades or venetian blinds in the windows to prevent full direct sunlight from striking the screen. A moderate amount of diffuse or indirect daylight from the windows will have no effect. But in the "bad" setup even a small amount of daylight from the windows would reflect back at the viewers, washing out the picture, making it necessary to fully darken the room by blocking the windows with opaque shutters or dark curtains.

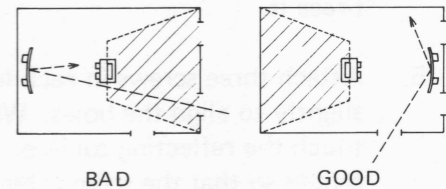


Figure 1

**Room traffic.** In any room there are predictable traffic paths where people usually walk — from one doorway to another, from either doorway to the principal chairs and couches, from a couch to a stereo equipment console, etc. The screen should be located away from these common traffic paths. The screen has a finely-textured reflecting surface which is easily damaged and should not be touched; smudges, stains, and scratches are not readily removable. If the screen is placed where people are likely to walk close to it often, it is likely that occasionally someone will accidentally brush against it, strike it, or place a hand on it. Locating the screen away from common room traffic paths minimizes the likelihood of eventual screen damage.

The preceding considerations should be weighed together with room decor and personal taste to arrive at the optimum screen location.

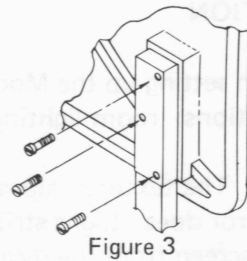
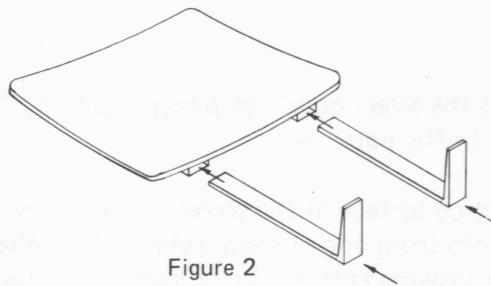
Unpack the screen and set it up as follows.

#### CAUTION

HANDLE THE SCREEN ONLY BY ITS EDGES. DO NOT TOUCH THE SCREEN SURFACE, EVEN WHEN IT IS STILL IN THE POLYETHYLENE BAG.

1. Clear a large working area on the floor, and lay the screen carton down flat. Cut its straps and open the carton. If necessary turn the carton over so that the screen is face-up. Slide the carton off the screen, leaving the screen lying face-up on the floor.
2. Remove the metal screen legs from the carton by cutting the straps holding them in place. (If you intend to mount the screen on the wall rather than on its legs, put the legs aside and refer to the Wall Mounting Instructions.)

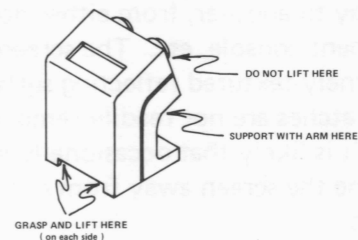
3. Remove the foam corners and the polyethylene bag from the screen. Slide the legs into the screen brackets, as shown in Figure 2.



4. Raise the screen to a standing position. This requires two people, one on each side; each person should place one hand under the back of the screen to lift it and the other hand on the leg to brace it.
5. Attach three screws in each leg, as shown in Figure 3. It may be necessary to lift the screen slightly to align the holes. When grasping the screen to lift it, remember to be careful not to touch the reflecting surface. After threading the three screws in each leg, fully tighten all of the screws so that the screen stands rigidly erect on its legs. Then move the screen to the location you have selected for it.

## II. PROJECTOR ALIGNMENT

Unpack and set up the projector, in accordance with the instructions printed on the projector's carton. When handling the projector, never support its weight by lifting or grasping one of the LightGuide tubes; doing so may misalign it. Always lift the cabinet, as shown in Figure 4. And since the projector weighs 140 lbs, two people are required in order to handle it safely; don't try to move it alone.



Place the projector approximately eight feet in front of the screen.

### NOTE

THE PROJECTOR AND THE SCREEN MUST BOTH BE PLACED ON A COMMON LEVEL SURFACE. IF THE SCREEN IS INSTALLED ON A RAISED PLATFORM, THE PROJECTOR MUST ALSO BE PLACED ON A RAISED PLATFORM SO THAT ITS FEET ARE AT PRECISELY THE SAME LEVEL AS THE FEET OF THE SCREEN.



Use the alignment cord (packaged in the accessories envelope) to locate the proper position of the projector. When unwound the cord is approximately 17 feet long, with a loop at each end and a fiber washer knotted exactly midway along its length. Place the end loops on the pins which are located on the rear of the screen near its lower corners, and extend the cord forward from the screen in a V. (See Figure 5.) Pull the cord taut and mark the floor where the knotted washer falls. Put the cord aside and move the projector to place its front foot on this spot. (The projector rests on three feet: one under each rear corner and the front foot under the center of the projecting shelf.)

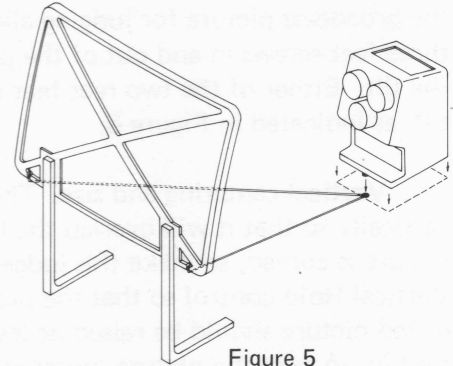


Figure 5

The spot indicated by the alignment cord is the only correct location for the front foot of the projector, and it should not be changed in subsequent steps. The location of the projector relative to the screen is quite critical; poor focus and color convergence will result if the projector is moved from its intended position. If the projector will be placed on a deep-pile rug, we suggest the use of a coaster under each foot to prevent it from gradually sinking into the rug. If it will be used on a hardwood or tile floor, we suggest placing a thin textured rubber mat under each foot (or under the entire projector) to prevent it from sliding easily.

Plug the projector's line cord into an AC outlet. Use an outlet that is always "live," not one whose power is controlled by a wall switch. Connect the set to your antenna. A 75-ohm coaxial cable is required, with standard "F" connector. This will screw into the Model 1000A's antenna jack, located at the right end of the Connection Panel, which is recessed at the bottom of the projector's rear side.

Turn the set on by rotating the Volume control. Tune in a strong station and observe the picture. The following steps will center the picture horizontally and vertically on the screen, correct any tilt, and fix its vertical size.

**Horizontal centering.** The first step in centering the picture is to pre-set the Horizontal Hold control (which, over the central portion of its range, can shift the picture left and right). When not correctly set the Horizontal Hold control can cause any vertical lines in the picture to bend over toward the left or right as they reach the top of the picture. Adjust the control so that a vertical line in the picture (such as a wall or the edge of a building) remains straight all the way to the top of the picture.

Now observe the overlap of the picture beyond the left and right edges of the screen. If there is not a smooth white wall right behind the screen to show the overlapping portions of the picture, use the small screen sample supplied (or a white card) to locate the picture boundaries. Without disturbing the location of the front foot, lift the projector at its rear and pivot (rotate) it slightly to center the picture on the screen, with equal overlap at left and right edges. You may find it helpful to turn up the Contrast and Brightness controls to make the edges of the picture more plainly visible. Shade any windows and turn off lights if necessary. Also, if scene changes in the program material make the picture hard to observe, move the Normal/Test switch to the Test position to project the internally-generated crosshatch pattern, and pivot the projector so that the horizontal lines extend beyond the left and right edges of the screen by equal amounts.

**Tilt.** Rotate the Vertical Hold control clockwise to shrink the picture vertically, placing the top of the projected picture just below the top of the screen. If the top of the picture is not precisely parallel with the top of the screen, the projector tilt should be corrected. (Here again you may find the Test pattern more useful than the broadcast picture for judging alignment.) Each of the projector's three feet screws in and out of the projector's bottom panel, varying the tilt. Either of the two rear feet should be adjusted to correct the tilt, as indicated in Figure 6.

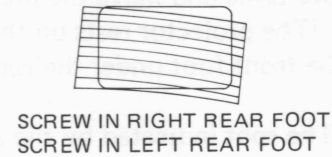
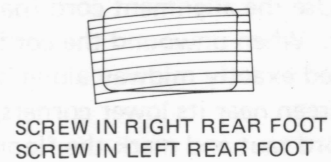


Figure 6

**Vertical centering and size.** The next step is to center the picture vertically so that it will overlap the top and bottom of the screen by equal amounts. (The bottom of the picture is curved, so make this judgement at the center rather than the corners of the screen.) Adjust the Vertical Hold control so that the picture doesn't quite fill the screen vertically, and note whether the projected picture should be raised or lowered on the screen. To lower the picture, screw the front projector foot in; to raise the picture, unscrew the front foot. In order to do this the front of the projector must be lifted off the floor. Do not raise it by lifting or pushing up the LightGuide tubes. Have a helper stand at the rear of the projector, grasp the lip at the front of the top of the cabinet, and pull up to tilt the projector back on its rear feet (being careful not to let the projector slide away from its proper location).

Turn down the Vertical Hold control to expand the vertical size of the picture until it extends beyond the top and bottom edges of the screen; the overlap should be small (an inch or so) and equal at top and bottom.

Finally, use the alignment cord to check the position of the front foot again, making sure that the projector location was not inadvertently changed during the alignment procedure. Since the front foot is recessed beneath the projector shelf and difficult to see, a mark on the upper surface of the shelf serves as a convenient guide to the location of the foot, which must be within one inch of the spot indicated by the alignment cord in order to obtain a sharp television picture over most of the screen area.

The tuning controls on the Model 1000A permit the selection of both all VHF channels and up to 12 UHF channels by means of the single Channel Selector knob. The desired channel band is selected by the UHF/VHF switch located directly above the Channel Selector knob.

When the VideoBeam Projection Television is first installed, its tuning system should be set up as below. After the controls are set initially, they should rarely need further adjustment. However, it is recommended that you familiarize yourself with how it's done, so that you can check the set's tuning accuracy at a later time.

#### NOTE

EXCEPT WHEN ACTUALLY ADJUSTING THE UHF PRE-SET AND VHF FINE TUNING CONTROLS, THE PLASTIC LID THAT COVERS THEM SHOULD BE LEFT CLOSED TO AVOID DAMAGING IT.

#### Presetting UHF channels.

When the UHF/VHF switch is set to UHF, the Channel Selector's 12 positions correspond to any 12 UHF channels chosen by these presetting instructions.

1. First identify the UHF channels that the VideoBeam Projection Television set can receive. To do so, set the UHF/VHF switch to UHF; the AFT (Automatic Fine Tuning) switch located directly below the Channel Selector to OFF; and the Channel Selector to position 2. (Position 2 is suggested only as a convenient starting point; any position may be used.)

Lift the lid covering the preset and fine tuning controls and locate the UHF tuning thumbwheel at the left identified by the number 2. Rotate the thumbwheel over the entire UHF band to identify the UHF channels in your area one by one. Note that the action of the thumbwheel is such that as you approach a channel, only a very small adjustment of the control is needed to tune it in.

While identifying UHF channels, ascertain and make a note of the best antenna orientation for each channel, if the antenna is mounted on a rotor.

2. Each of the 12 positions of the Channel Selector has a corresponding UHF tuning thumbwheel that can be tuned in to any UHF channel. Because of this flexibility, it's a good idea at this time to decide upon a convenient order for day-to-day selection with the Channel Selector.
3. After deciding upon the preset order, select the position of the Channel Selector you'll be using for a given UHF channel, and tune in that channel for best picture quality using the thumbwheel numbered to correspond to the position of the Channel Selector.

When you have tuned in the UHF channel, check for tuning accuracy by switching the AFT on and off. When a channel is tuned properly, there should be virtually no discernable difference with the AFT either on or off. If there is, adjust the thumbwheel with the AFT off until there is virtually no difference with the AFT on.

4. Repeat the above procedure for all other UHF channels, tuning in each one with the UHF thumb-wheel corresponding to each of the other positions of the Channel Selector. When you have completed presetting all UHF channels, and have checked each for tuning accuracy, return the AFT switch to ON for the day-to-day operation of the set.
5. A sheet of plastic UHF channel numbers is provided so that you can readily identify the UHF channels' positions on the Channel Selector knob. Remove the knob by grasping it firmly and pulling it straight up off its shaft. Snap the appropriate numbers out from the sheet, and insert them in the slots around the edge of the knob in the order you preset the UHF channels. When replacing the knob, be sure that its irregularly-shaped center hole is lined up with the flat side of the shaft, before pressing the knob firmly back down onto the shaft.

#### VHF fine tuning.

The fine tuning for VHF channels 2-13 has been adjusted at the factory. To tune in a VHF channel, simply set the UHF/VHF switch to VHF and select the desired channel with the Channel Selector knob.

You can easily check the fine tuning accuracy of a VHF channel at any time by switching the AFT off and on; there should be virtually no change in picture quality as you do so. If there is, touch up the fine tuning for the channel in question by adjusting the appropriately numbered VHF fine tuning control (located below the UHF preset controls under the lid) with the AFT off until there is virtually no difference with the AFT on or off. Note that only a very small adjustment to the fine tuning knob will result in a visible change. If you ever do adjust the fine tuning for a VHF channel, be sure to return the AFT switch to ON for day-to-day operation.

#### NOTE

THE PURPOSE OF THE AFT CIRCUIT IS TO HOLD EACH CHANNEL AT ITS PRECISE FREQUENCY AUTOMATICALLY. HOWEVER, IT'S POSSIBLE WITH VIDEOBEAM PROJECTION TELEVISION, AS WITH ANY TV SET, TO MISADJUST THE FINE TUNING TO SUCH AN EXTENT THAT THE AFT CAN NO LONGER "HOLD" THE CHANNEL. SHOULD THE FINE TUNING FOR A CHANNEL EVER BECOME GROSSLY MISADJUSTED, SIMPLY TURN OFF THE AFT AND READJUST THE APPROPRIATE FINE TUNING KNOB UNTIL THE PICTURE LOOKS RIGHT AGAIN. CHECK FOR TUNING ACCURACY AS DESCRIBED ABOVE, THEN LEAVE THE AFT ON.

## ANTENNA NOTES

In the vast majority of cases, the weakest link in the system that delivers television signals from the original source to the home receiver is the receiving antenna system. This system, which is comprised of the antenna (or antennae), the cable that delivers the signal to the receiver, and any accessories used, such as splitters, amplifiers, etc., should ideally be able to deliver a signal which simultaneously meets all these requirements for all received channels: signal level of about 10,000 microvolts (+20 d.b.m.v.), high signal-to-noise ratio, minimal interference from man-made and natural sources, reasonably flat frequency response, and minimum pickup of reflected (multipath) signals.

The material presented here is not by any means original; these facts and principals have long been known although they are not always strictly adhered to. In many cases, the degradation in reception due to a less-than-optimum antenna system is not glaringly obvious on a direct-view set, nor is the owner very likely to complain about minor flaws in the picture. The size and bandwidth of the VideoBeam 1000A, however, mercilessly reveals any and all transmission faults. In addition, the owner of a VideoBeam is more likely to be critical of picture quality than the owner of a smaller (and less expensive) receiver. Considering the set's ability to "magnify" picture defects and the importance VideoBeam owners place on picture quality, it is worthwhile to pay attention to detail in the antenna system.

The best general rule is to use a high gain "LPV" type of antenna and rotor. We strongly suggest the use of well-known brands, such as Winegard, Jerrold, J.F.D. etc. A high gain model, even in the city, makes sense as the gain is achieved by narrowing the forward lobe in the antenna's polar response pattern, resulting in greater directivity, and therefore potentially greater ghost rejection. In the city, excess signal strength should be attenuated with a resistive pad; this tends also to desensitize the receiver to whatever impedance mis-match is present in the antenna system. (More about this later.) High field strength on some channels, low on others, may require a variable attenuator in extreme cases. A rotor can drift if it does not brake properly when de-energized; the owner should be aware of this possibility, and the problems frequently caused by backlash in the rotor gears.

The transmission line from antenna to receiver should be a high quality foam-type 75 ohm coaxial cable, specifically designed for minimum loss at UHF frequencies, such as Jerrold CAC-6. Don't use twinlead, as even the shielded type is much more susceptible to RF pickup than coax. Avoid the use of preamplifiers and amplified splitters, unless absolutely necessary. Unless all signals in the area are low-level, a pre-amp can be overloaded by one strong signal, which can cause cross-modulation on some (or all) other channels. Amplified splitters can also cause cross-modulation, and frequently are not 75 ohms at all frequencies, causing mis-match.

### On ghosting . . .

There are 2 main causes of ghosts. One is due to multi-path reception, and can only be minimized by using an antenna which accepts only the primary (direct) signal, while rejecting signals arriving from other directions. This ghost is usually spaced "far" (many inches) to the right of the desired signal on the VideoBeam screen, and may shift or disappear as the antenna is rotated.



"Close In" (less than an inch or so to the right of the desired signal) ghosts generally are caused by impedance mis-match somewhere in the antenna system. While a system that really "looks like" 75 ohms from 50 MHz to 1000 MHz is almost impossible to achieve, impedance mis-matches can be minimized. For one, keep the system simple! Preamps and active splitters as previously mentioned can cause impedance mis-match and cross-modulation. Resistive pads (commercially available in different attenuation levels) at both the antenna and receiver end of the transmission line will mitigate the effects of impedance bumps at the expense of signal strength. If antenna system-related ghosts are present, and available signal strength is sufficient, 3 to 6 dB of attenuation at each end will "fool" both the antenna and receiver into "seeing" close to the proper 75 ohms.

Passive splitters must be employed with caution, since they work properly only if every output is terminated in 75 ohms. Failure to terminate each properly will result in ghosts and frequency response bumps that will become more severe as the cable length from the splitter to the unterminated end is increased. It may, when many sets are to be fed simultaneously from one existing antenna system, be advisable to install a second antenna for the VideoBeam receiver. This avoids the use of these accessories, and also ensures that the antenna's position will be optimized for the channel the VideoBeam receiver is tuned to.

#### Miscellaneous Comments . . .

Small changes in antenna position and height can make large differences in reception quality, especially for UHF. The best situation is to be "line of sight" for all desired channels, when this is practical. Multipath ghosting can frequently be reduced by raising the antenna above a local reflector, such as a near-by building.

Even the best coaxial cable has some loss; the best commercially available loses several dB per hundred feet at UHF frequencies.

Foil shielded coax is superior in shielding compared to the braided type; if local interference is strong, avoid braided shielding.

For the safety of the owner, his home, and the VideoBeam receiver itself, lightning protection should always be provided. Most antennas sold today are grounded to the mast for DC; simply grounding the mast assembly well will prevent static build up. The responsibility for safety rests squarely on the installer! Not only must the antenna not "attract" lightning, but it should be installed so as not to pose a mechanical hazard; e.g., not tear down a weak-chimney, etc. A system must not only perform adequately at the time of installation, but must also be able to survive exposure for as long as possible with a minimum of performance degradation.

#### A word about cable systems . . .

Not all of them live up to the performance levels we have been led to expect! Most (in our limited experience) are good; some are excellent; a few we've seen are poor. (This experience has been gathered only from a few "drops" off each system; we don't know how good the good ones are "across town", nor if the poor ones were due to a local problem at that location only.) You can be reasonably confident that the cable people will provide adequate signal strength at all locations, but cross-modulation can be a problem. Obviously, there is no way to eliminate a cable-related problem in the VideoBeam receiver, nor should you try. If possible, demonstrate the problem using another receiver on the same cable. The problem must be settled between the cable service and the subscriber.

## WALL MOUNTING INSTRUCTIONS FOR VIDEOBEAM SCREEN

Do not touch the screen surface, even before the bag is removed.

Read instructions through before you start. This job requires two people.

### Materials needed

TV screen wall mounting assembly (10-990-286)  
Electric drill  
Correct size drill bit (5/8" for the toggle bolts we use)  
12 toggle bolts, 1/4" diameter x 3" long  
6' steel measuring tape  
Pencil  
Screw-driver  
Yard stick

### How to attach the support pins to the leg supports

Turn screen face down. Leave the protective plastic bag on. Tear the bag open in the area of the leg supports. Fit a retaining ring 1 1/4 inches onto each of the support pins and slide the support pins through the top holes of the leg support brackets, as shown in the drawing. Fit the second retaining ring on the other end of the support pins.

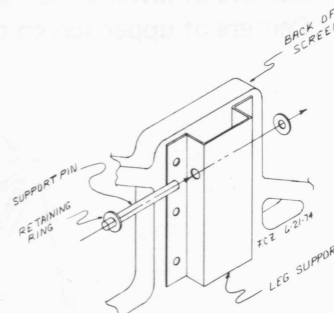


Figure 7

### Lay-out and installation of wall brackets

Careful lay-out will insure that the proper screen to projector relationship is maintained. Double-check your measurements before drilling any holes in your wall.

1. The first step is to find the vertical center point of where the screen is to be placed. Lean the screen against the wall directly below the place on the wall where the screen will hang. Measure in 34 3/4" from either edge of the screen and mark this point on the wall. Move the screen out of the work area.
2. Measure up 50" from the floor and make a mark on the wall.
3. Mark a point 23" each side of the 50" high mark. Make sure that these points are also 50" from the floor.
4. Align the top center hole of the wall brackets with the points 23" each side of center and after checking that each bracket is perpendicular to the floor, mark the center of the 6 outside holes in each bracket.
5. Drill the correct size holes and secure the brackets to the wall with 1/4 x 3" toggle bolts, making sure the diagonal slots in the wall brackets are at the top end.
6. Remove the plastic bag from the screen. With one person on each side, lift the screen by the edge, being careful not to touch the viewing surface, and lower the support pins into the diagonal slots of the wall brackets.

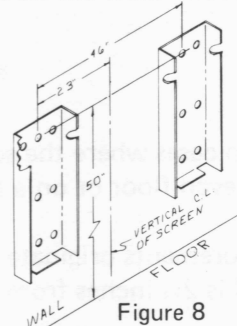


Figure 8

## PROJECTOR ALIGNMENT REFERENCE DIMENSIONS

Proper alignment of the projector to the screen can be verified by checking any\* of the following dimensions:

Points on Screen Assembly	Distance from Point "P" on Projector ( $\pm 1$ inch)**
A — Pins for alignment cord	110½"
B — Front inside corners of foot	82½"
C — Rear inside corners of foot	106"
D — Centers of lower screen corners	107"
E — Centers of upper screen corners	123"

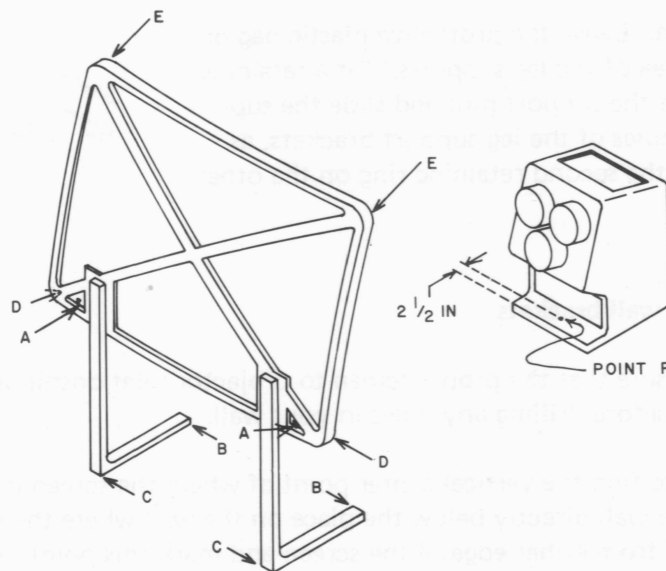


Figure 9

\*In certain cases where the screen legs may not be vertical (if, for instance, the screen has been placed on an uneven floor or on a thick rug), checking the dimensions to both points D and E is recommended.

\*\*All measurements originate at a point on the cabinet shelf above the front foot which is centered left to right and is 2½ inches from the front cabinet edge.